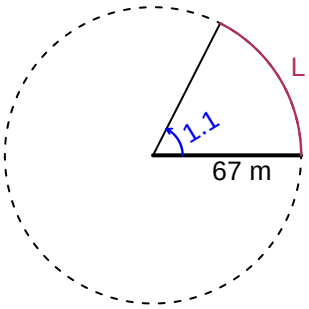
Name: Date:

Trig Final (TEST v680)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.

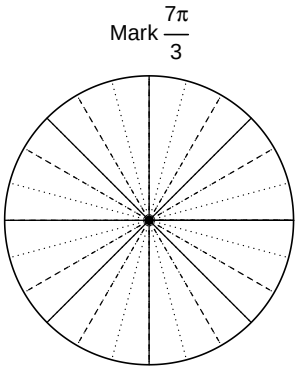
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 1.1 radians. The radius is 67 meters. How long is the arc in meters?

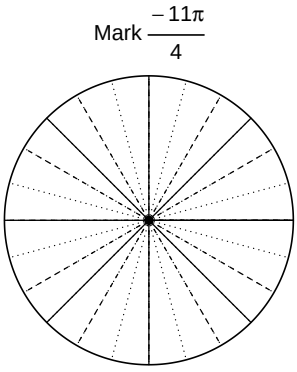


Question 2

Consider angles $\frac{7\pi}{3}$ and $\frac{-11\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{7\pi}{3}\right)$ and $\cos\left(\frac{-11\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\sin(7\pi/3)$



Find $\cos(-11\pi/4)$

Question 3

If $\sin(\theta) = \frac{-15}{17}$, and θ is in quadrant III, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -5.41$ meters, a frequency of 4.35 Hz, and an amplitude of 2.65 meters. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).